

10/506997

SEQUENCE LISTING

DT09 Rec'd PCT/PTO 04 SEP 2004

<110> Zhu, Zhenping

<120> Human Antibodies Specific To KDR And Uses Thereof

<130> 11245/47876

<140> not assigned

<141> 2003-03-04

<150> 60/361,783

<151> 2002-03-04

<160> 93

<170> WordPerfect 8.0 for Windows

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Asp Gly Asn Lys Arg Pro Ser
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Gly

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Gln Gly
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 Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr
 20 25 30

gct atc agc tgg gtg cga cag gcc cct gga caa ggg ctt gag tgg atg 144
 Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
 35 40 45

gga ggg atc atc cct atc ttt ggt aca gca aac tac gca cag aag ttc 192
 Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala Gln Lys Phe
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cag ggc aga gtc act ttt acc gcg gac aaa tcc acg agt aca gcc tat 240
 Gln Gly Arg Val Thr Phe Thr Ala Asp Lys Ser Thr Ser Ala Tyr
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atg gag ttg agg agc ctg aga tct gac gac acg gcc gtg tat tac tgt 288
 Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

gcg aga gga tac gat tac tat gat agt agt ggc gtg gct tcc ccc ttt 336
 Ala Arg Gly Tyr Asp Tyr Tyr Asp Ser Ser Gly Val Ala Ser Pro Phe
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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr
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Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
 35 40 45

Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala Gln Lys Phe
 50 55 60

Gln Gly Arg Val Thr Phe Thr Ala Asp Lys Ser Thr Ser Thr Ala Tyr
 65 70 75 80

Met Glu Leu Arg Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

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 100 105 110

Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
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agg gtc acc atc tct tgt tct gga agc acc tcc aac atc ggt act aat 96
 Arg Val Thr Ile Ser Cys Ser Gly Ser Thr Ser Asn Ile Gly Thr Asn
 20 25 30

act gca aac tgg ttc cag cag ctc cca gga acg gcc ccc aaa ctc ctc 144
 Thr Ala Asn Trp Phe Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu
 35 40 45

atc cac aat aat aat cag cgg ccc tca ggg gtc cct gac cga ttc tct 192
 Ile His Asn Asn Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser
 50 55 60

ggc tcc aag tct ggc acc tca gcc tcc ctg gcc atc agt ggg ctc cag 240
 Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Ser Gly Leu Gln
 65 70 75 80

tct gag gat gag gct gat tat tac tgt gca gca tgg gat gac agc ctg 288
 Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ala Trp Asp Asp Ser Leu
 85 90 95

aat ggc cat tgg gtg ttc ggc gga ggg acc aag ctg acc gtc ctg 333

Asn Gly His Trp Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

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Arg Val Thr Ile Ser Cys Ser Gly Ser Thr Ser Asn Ile Gly Thr Asn
 20 25 30

Thr Ala Asn Trp Phe Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu
 35 40 45

Ile His Asn Asn Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser
 50 55 60

Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Ser Gly Leu Gln
 65 70 75 80

Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Ala Trp Asp Asp Ser Leu
 85 90 95

Asn Gly His Trp Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

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tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttc agt agc tat
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
 20 25 30 96

agc atg aac tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtc
 Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45 144

tca tcc att agt agt agt agt tac ata tac tac gca gac tca gtg
 Ser Ser Ile Ser Ser Ser Ser Tyr Ile Tyr Tyr Ala Asp Ser Val
 50 55 60 192

aag ggc cga ttc acc atc tcc aga gac aac gcc aag aac tca ctg tat
 Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
 65 70 75 80 240

ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt
 Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95 288

gct gat gtc aca gat gct ttt gat atc tgg ggc caa ggg aca atg gtc 336
 Ala Arg Val Thr Asp Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val
 100 105 110

acc gtc tca agc 348
 Thr Val Ser Ser
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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
 20 25 30

Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ser Ser Ile Ser Ser Ser Tyr Ile Tyr Tyr Ala Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg Val Thr Asp Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val
 100 105 110

Thr Val Ser Ser
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 Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Tyr
 20 25 30

tta gcc tgg tac caa cag aaa cct ggc cag gct ccc agg ctc ctc atc 144
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
 35 40 45

tat gat tca tcc aac agg gcc act ggc atc cca gcc aga ttc agt ggc 192
 Tyr Asp Ser Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
 50 55 60

agt ggg tct ggg aca gac ttc act ctc acc atc agc agc cta gag cct 240

Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Glu	Pro	
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Glu	Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Leu	Gln	His	Asn	Thr	Phe	Pro	Pro	
					85				90					95		
acg ttc ggc caa ggg acc aag gtg gaa atc aaa															321	
Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys						
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Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Tyr																
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Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile																
					35				40					45		
Tyr Asp Ser Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly																
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Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro																
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Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln His Asn Thr Phe Pro Pro																
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Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys																
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Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Thr	Phe	Ser	Ser	Tyr	
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agc atg aac tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtc																144
Ser	Met	Asn	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Val	
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tca tcc att agt agt agt agt tac ata tac tac gca gac tca gtg																192
Ser	Ser	Ile	Ser	Ser	Ser	Ser	Tyr	Ile	Tyr	Tyr	Ala	Asp	Ser	Val		
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aag ggc cga ttc acc atc tcc aga gac aac gcc aag aac tca ctg tat																240

Lys	Gly	Arg	Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ala	Lys	Asn	Ser	Leu	Tyr	
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ctg	caa	atg	aac	agc	ctg	aga	gcc	gag	gac	acg	gct	gtg	tat	tac	tgt	288
Leu	Gln	Met	Asn	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	
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gcg	aga	gtc	aca	gat	gct	ttt	gat	atc	tgg	ggc	caa	ggg	aca	atg	gtc	336
Ala	Arg	Val	Thr	Asp	Ala	Phe	Asp	Ile	Trp	Gly	Gln	Gly	Thr	Met	Val	
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acc	gtc	tca	agc													348
Thr	Val	Ser	Ser													
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Gln	Ser	Ala	Leu	Thr	Gln	Pro	Ala	Ser	Leu	Ser	Gly	Ser	Pro	Gly	Gln	
					5			10				15				
tcg	atc	acc	atc	tcc	tgc	gct	gga	acc	acc	act	gat	ctt	aca	tat	tat	96
Ser	Ile	Thr	Ile	Ser	Cys	Ala	Gly	Thr	Thr	Thr	Asp	Leu	Thr	Tyr	Tyr	
					20			25			30					
gac	ctt	gtc	tcc	tgg	tac	caa	cag	cac	cca	ggc	caa	gca	ccc	aaa	ctc	144
Asp	Leu	Val	Ser	Trp	Tyr	Gln	Gln	His	Pro	Gly	Gln	Ala	Pro	Lys	Leu	
					35			40			45					
gtg	att	tat	gac	ggc	aat	aag	cg	ccc	tca	gga	gtt	tct	aat	cgc	tcc	192
Val	Ile	Tyr	Asp	Gly	Asn	Lys	Arg	Pro	Ser	Gly	Val	Ser	Asn	Arg	Phe	
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tct	ggc	tcc	aag	tct	ggc	aac	acg	gcc	tcc	ctg	aca	atc	tct	gga	ctc	240
Ser	Gly	Ser	Lys	Ser	Gly	Asn	Thr	Ala	Ser	Leu	Thr	Ile	Ser	Gly	Leu	
					65			70			75			80		
cag	gct	gag	gag	gct	gat	tat	tac	tgc	aac	tca	tat	gta	agc	agc		288
Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Asn	Ser	Tyr	Val	Ser	Ser	
					85			90			95					
agg	ttt	tat	gtc	ttc	gga	act	ggg	acc	aag	gtc	acc	gtc	cta			330
Arg	Phe	Tyr	Val	Phe	Gly	Thr	Gly	Thr	Lys	Val	Thr	Val	Leu			
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Ser	Ile	Thr	Ile	Ser	Cys	Ala	Gly	Thr	Thr	Asp	Leu	Thr	Tyr	Tyr		
					20			25			30					

Asp Leu Val Ser Trp Tyr Gln Gln His Pro Gly Gln Ala Pro Lys Leu
 35 40 45

Val Ile Tyr Asp Gly Asn Lys Arg Pro Ser Gly Val Ser Asn Arg Phe
 50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
 65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Asn Ser Tyr Val Ser Ser
 85 90 95

Arg Phe Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
 100 105 110

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tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttc agt agc tat 96
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
 20 25 30

agc atg aac tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtc 144
 Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

tca tcc att agt agt agt agt tac ata tac tac gca gac tca gtg 192
 Ser Ser Ile Ser Ser Ser Ser Tyr Ile Tyr Tyr Ala Asp Ser Val
 50 55 60

aag ggc cga ttc acc atc tcc aga gac aac gcc aag gac tca ctg tat 240
 Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asp Ser Leu Tyr
 65 70 75 80

ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt 288
 Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

gcg aga gtc aca gat gct ttt gat atc tgg ggc caa ggg aca atg gtc 336
 Ala Arg Val Thr Asp Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val
 100 105 110

acc gtc tca agc 348
 Thr Val Ser Ser
 115

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<400> 31

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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
 20 25 30

Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ser Ser Ile Ser Ser Ser Ser Tyr Ile Tyr Tyr Ala Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asp Ser Leu Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg Val Thr Asp Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val
 100 105 110

Thr Val Ser Ser
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<210> 32

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gac aga gtc acc atc act tgt cgg gcg agt cag ggt att agt agt cgg 96
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Arg
 20 25 30

tta gcc tgg tat cag cag aaa cca ggg aaa gcc cct aag ctc ctg atc 144
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

tat gct gca tcc agt ttg caa act ggg gtc cca tca agg ttc agc ggc 192
 Tyr Ala Ala Ser Ser Leu Gln Thr Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

agt gga tct ggg aca gat ttc act ctc act atc agc agc ctg cag cct 240
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

gaa gat ttt gca act tac tat tgt caa cag gct aac agg ttc cct ccg 288
 Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ala Asn Arg Phe Pro Pro
 85 90 95

act ttc ggc cct ggg acc aaa gtg gat atc aaa 321
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 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Arg
 20 25 30

 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

 Tyr Ala Ala Ser Ser Leu Gln Thr Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
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 85 90 95

 Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
 100 105

<210> 34
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agg gtc acc atc tcc tgc act ggg agc cac tcc aac ttc ggg gca gga 96
 Arg Val Thr Ile Ser Cys Thr Gly Ser His Ser Asn Phe Gly Ala Gly
 20 25 30

act gat gta cat tgg tac caa cac ctt cca gga aca gcc ccc aga ctc 144
 Thr Asp Val His Trp Tyr Gln His Leu Pro Gly Thr Ala Pro Arg Leu
 35 40 45

ctc att cat gga gac agt aat cgg ccc tcc ggg gtc cct gac cga ttc 192
 Leu Ile His Gly Asp Ser Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60

tct ggc tcc agg tct ggc acc tca gcc tcc ctg gcc atc act ggg ctc 240
 Ser Gly Ser Arg Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu
 65 70 75 80

cgg gtt gag gat gag gct gat tat tac tgt cag tcg tat gac tat ggc 288
 Arg Val Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Tyr Gly
 85 90 95

ctg aga ggt tgg gtg ttc ggc ggc ggg acc aag ctg acc gtc ctt 333
 Leu Arg Gly Trp Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

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Arg Val Thr Ile Ser Cys Thr Gly Ser His Ser Asn Phe Gly Ala Gly
 20 25 30

Thr Asp Val His Trp Tyr Gln His Leu Pro Gly Thr Ala Pro Arg Leu
 35 40 45

Leu Ile His Gly Asp Ser Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60

Ser Gly Ser Arg Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu
 65 70 75 80

Arg Val Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Tyr Gly
 85 90 95

Leu Arg Gly Trp Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

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 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asn Ile Asn Asn Tyr
 20 25 30

tta aat tgg tat caa cag aaa cca gga aaa gcc cct aag ctc ctg atc 144
 Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

tat gct gcc tcc act ttg caa agt ggg gtc cca tca agg ttc agt ggc 192
 Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

agt gga tct ggg aca gat ttc act ctc acc atc acc agc cta cag cct 240
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Thr Ser Leu Gln Pro
 65 70 75 80

gaa gat tct gca act tat tac tgc caa cag tat tcc cgt tat cct ccc 288
 Glu Asp Ser Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Arg Tyr Pro Pro
 85 90 95

act ttc ggc gga ggg acc aag gtg gag atc aca 321
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 100 105

<210> 37

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<400> 37

Asp Val Val Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asn Ile Asn Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Thr Ser Leu Gln Pro
65 70 75 80

Glu Asp Ser Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Arg Tyr Pro Pro
85 90 95

Thr Phe Gly Gly Thr Lys Val Glu Ile Thr
100 105

<210> 38

<211> 330

<212> DNA

<213> Human

<400> 38

cag tct gcc ctg act cag cct gcc tcc gtg tct ggg tct cgt gga cag 48
Gln Ser Ala Leu Thr Gln Pro Ala Ser Val Ser Gly Ser Arg Gly Gln
5 10 15

tcg atc acc ctc tcc tgc acc ggc tcc agc act gat gtg ggt aat tat 96
Ser Ile Thr Leu Ser Cys Thr Gly Ser Ser Thr Asp Val Gly Asn Tyr
20 25 30

aac tat atc tcc tgg tac caa caa cac cca ggc caa gcc ccc aaa ctc 144
Asn Tyr Ile Ser Trp Tyr Gln Gln His Pro Gly Gln Ala Pro Lys Leu
35 40 45

ttg att tac gat gtc act agt cgg ccc tca ggt gtt tct gat cgc ttc 192
Leu Ile Tyr Asp Val Thr Ser Arg Pro Ser Gly Val Ser Asp Arg Phe
50 55 60

tct ggc tcc aag tca ggc ctc acg gcc tcc ctg acc atc tct gga ctc 240
Ser Gly Ser Lys Ser Gly Leu Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

cag cct gaa gac gag gct gac tat tac tgc aac tcc tat tct gcc acc 288
Gln Pro Glu Asp Glu Ala Asp Tyr Tyr Cys Asn Ser Tyr Ser Ala Thr
85 90 95

gac act ctt gtt ttt ggc gga ggg acc aag ctg acc gtc cta 330
Asp Thr Leu Val Phe Gly Gly Thr Lys Leu Thr Val Leu
100 105 110

<210> 39

<211> 110

<212> PRT

<213> Human

<400> 39

Gln Ser Ala Leu Thr Gln Pro Ala Ser Val Ser Gly Ser Arg Gly Gln
 5 10 15

Ser Ile Thr Leu Ser Cys Thr Gly Ser Ser Thr Asp Val Gly Asn Tyr
 20 25 30

Asn Tyr Ile Ser Trp Tyr Gln Gln His Pro Gly Gln Ala Pro Lys Leu
 35 40 45

Leu Ile Tyr Asp Val Thr Ser Arg Pro Ser Gly Val Ser Asp Arg Phe
 50 55 60

Ser Gly Ser Lys Ser Gly Leu Thr Ala Ser Leu Thr Ile Ser Gly Leu
 65 70 75 80

Gln Pro Glu Asp Glu Ala Asp Tyr Tyr Cys Asn Ser Tyr Ser Ala Thr
 85 90 95

Asp Thr Leu Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

<210> 40

<211> 333

<212> DNA

<213> Human

<400> 40

cag gct gtg ctg act cag ccg tcc tca gtg tct ggg gcc cca gga cag 48
 Gln Ala Val Leu Thr Gln Pro Ser Ser Val Ser Gly Ala Pro Gly Gln
 5 10 15

agg gtc acc atc tcc tgc act ggg caa agc tcc aat atc ggg gca gat 96
 Arg Val Thr Ile Ser Cys Thr Gly Gln Ser Ser Asn Ile Gly Ala Asp
 20 25 30

tat gat gta cat tgg tac cag caa ttt cca gga aca gcc ccc aaa ctc 144
 Tyr Asp Val His Trp Tyr Gln Gln Phe Pro Gly Thr Ala Pro Lys Leu
 35 40 45

ctc atc tat ggt cac aac aat cgg ccc tca ggg gtc cct gac cga ttc 192
 Leu Ile Tyr Gly His Asn Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60

tct ggc tcc aag tct ggc acc tca gtc tcc ctg gtc atc agt ggg ctc 240
 Ser Gly Ser Lys Ser Gly Thr Ser Val Ser Leu Val Ile Ser Gly Leu
 65 70 75 80

cag gct gag gat gag gct gat tat tat tgc cag tcc tat gac agc agt 288
 Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Ser Ser
 85 90 95

cta agt ggt ttg gta ttc ggc gga ggg acc aag gtg acc gtc cta 333
 Leu Ser Gly Leu Val Phe Gly Gly Thr Lys Val Thr Val Leu
 100 105 110

<210> 41

<211> 111

<212> PRT

<213> Human

<400> 41

Gln Ala Val Leu Thr Gln Pro Ser Ser Val Ser Gly Ala Pro Gly Gln
 5. 10 15

Arg Val Thr Ile Ser Cys Thr Gly Gln Ser Ser Asn Ile Gly Ala Asp
 20 25 30

Tyr Asp Val His Trp Tyr Gln Gln Phe Pro Gly Thr Ala Pro Lys Leu
 35 40 45

Leu Ile Tyr Gly His Asn Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60

Ser Gly Ser Lys Ser Gly Thr Ser Val Ser Leu Val Ile Ser Gly Leu
 65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Ser Ser
 85 90 95

Leu Ser Gly Leu Val Phe Gly Gly Thr Lys Val Thr Val Leu
 100 105 110

<210> 42

<211> 321

<212> DNA

<213> Human

<400> 42

gac atc cag ttg acc cag tct cca tct tct gtg tct gca tct gtt gga. 48
 Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Val Gly
 5 10 15

gac agc gtc acc atc act tgt cgg gcg agt cag gat att agc agc tgg 96
 Asp Ser Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Ile Ser Ser Trp
 20 25 30

tta gcc tgg tat caa cag aaa cca ggg gag gcc cct aag ctc ctg atc 144
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Glu Ala Pro Lys Leu Leu Ile
 35 40 45

tat gct gca tcc ctt ctt caa agt ggg gtc cca tca cgg ttc agc ggc 192
 Tyr Ala Ala Ser Leu Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

agt gga tct ggg aca gat ttc gct ctc act atc aac agc ctg cag cct 240
 Ser Gly Ser Gly Thr Asp Phe Ala Leu Thr Ile Asn Ser Leu Gln Pro
 65 70 75 80

gaa gat ttt gca act tac ttt tgt caa cag gct gac agt ttc cct ccc 288
 Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Ala Asp Ser Phe Pro Pro
 85 90 95

acc ttc ggc caa ggg aca cgg ctg gag att aaa 321
 Thr Phe Gly Gln Gly Thr Arg Leu Glu Ile Lys
 100 105

<210> 43

<211> 107

<212> PRT

<213> Human

<400> 43

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Val Gly
 5 10 15
 Asp Ser Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Ile Ser Ser Trp
 20 25 30
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Glu Ala Pro Lys Leu Leu Ile
 35 40 45
 Tyr Ala Ala Ser Leu Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Asp Phe Ala Leu Thr Ile Asn Ser Leu Gln Pro
 65 70 75 80
 Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Ala Asp Ser Phe Pro Pro
 85 90 95
 Thr Phe Gly Gln Gly Thr Arg Leu Glu Ile Lys
 100 105

<210> 44
 <211> 321
 <212> DNA
 <213> Human

<400> 44

gac atc gag ttg acc cag tct cca tct tcc gtg tct gca tct gtg gga 48
 Asp Ile Glu Leu Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Val Gly
 5 10 15
 gac aga gtc acc ctc act tgt cgg gcg agt cag agt att aag agg tgg 96
 Asp Arg Val Thr Leu Thr Cys Arg Ala Ser Gln Ser Ile Lys Arg Trp
 20 25 30
 tta gcc tgg tat cag cag aaa cca ggg aag gcc cct agg ctc ctc atc 144
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Arg Leu Leu Ile
 35 40 45
 tat gct gca tcc act ttg caa agt ggg gtc cca tca agg ttc agc ggc 192
 Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 ggt gga tct ggg aca gat ttc act ctc acc atc aac agc ctg cag cct 240
 Gly Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Asn Ser Leu Gln Pro
 65 70 75 80
 gaa gat ttt gca att tac tac tgt caa cag gct aac agt ttc cct ccc 288
 Glu Asp Phe Ala Ile Tyr Tyr Cys Gln Gln Ala Asn Ser Phe Pro Pro
 85 90 95
 act ttc ggc cct ggg acc aaa gtg gat atc aaa 321
 Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
 100 105

<210> 45
 <211> 107
 <212> PRT
 <213> Human

<400> 45

Asp Ile Glu Leu Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Val Gly
 5 10 15

Asp Arg Val Thr Leu Thr Cys Arg Ala Ser Gln Ser Ile Lys Arg Trp
 20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Arg Leu Leu Ile
 35 40 45

Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Gly Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Asn Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Ile Tyr Tyr Cys Gln Gln Ala Asn Ser Phe Pro Pro
 85 90 95

Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
 100 105

<210> 46

<211> 333

<212> DNA

<213> Human

<400> 46

cag tct gtc gtg acg cag ccg ccc tca gtg tct ggg gcc cca ggg cag 48
 Gln Ser Val Val Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
 5 10 15

agg gtc acc atc tcc tgc agt ggg agc agg tcc aac atc ggg gca cac 96
 Arg Val Thr Ile Ser Cys Ser Gly Ser Arg Ser Asn Ile Gly Ala His
 20 25 30

tat gaa gtc cag tgg tac cag cag ttt ccg gga gca gcc ccc aaa ctc 144
 Tyr Glu Val Gln Trp Tyr Gln Gln Phe Pro Gly Ala Ala Pro Lys Leu
 35 40 45

ctc atc tat ggt gac acc aat cgg ccc tca ggg gtc cct gac cga ttc 192
 Leu Ile Tyr Gly Asp Thr Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60

tct gcc tcc cac tct ggc acc tca gcc tcc ctt gcc atc aca ggg ctc 240
 Ser Ala Ser His Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu
 65 70 75 80

cag gct gag gat gag gct gat tat tac tgc cag tcg tat gac acc agt 288
 Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Thr Ser
 85 90 95

cta cgt ggt ccg gtg ttc ggc gga ggg acc aag ctg acc gtc cta 333
 Leu Arg Gly Pro Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

<210> 47

<211> 111

<212> PRT

<213> Human

<400> 47

Gln Ser Val Val Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
 5 10 15

Arg Val Thr Ile Ser Cys Ser Gly Ser Arg Ser Asn Ile Gly Ala His
 20 25 30

Tyr Glu Val Gln Trp Tyr Gln Gln Phe Pro Gly Ala Ala Pro Lys Leu
 35 40 45

Leu Ile Tyr Gly Asp Thr Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60

Ser Ala Ser His Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu
 65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Thr Ser
 85 90 95

Leu Arg Gly Pro Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

<210> 48

<211> 333

<212> DNA

<213> Human

<400> 48

cag tct gtc gtg acg cag ccg ccc tca gtg tct ggg gcc cca ggg cag 48
 Gln Ser Val Val Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
 5 10 15

agg gtc acc atc tcc tgc act ggg agc agc tcc aac atc ggg aca ggt 96
 Arg Val Thr Ile Ser Cys Thr Gly Ser Ser Asn Ile Gly Thr Gly
 20 25 30

tat gat gta cat tgg tac cag cag gtt cca gga tca gcc ccc aaa ctc 144
 Tyr Asp Val His Trp Tyr Gln Gln Val Pro Gly Ser Ala Pro Lys Leu
 35 40 45

ctc atc tat gct tac acc aat cgg ccc tca ggg gtc cct gac cga ttc 192
 Leu Ile Tyr Ala Tyr Thr Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60

tct ggc tcc aag tct ggc atg tca gcc tcc ctg gtc atc ggt ggt ctc 240
 Ser Gly Ser Lys Ser Gly Met Ser Ala Ser Leu Val Ile Gly Gly Leu
 65 70 75 80

cag gct gag gat gag gct gat tat tac tgc cag tcc ttt gac gac agc 288
 Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Phe Asp Asp Ser
 85 90 95

ctg aat ggt ctt gtc ttc gga cct ggg acc tcg gtc acc gtc ctc 333
 Leu Asn Gly Leu Val Phe Gly Pro Gly Thr Ser Val Thr Val Leu
 100 105 110

<210> 49

<211> 111

<212> PRT

<213> Human

<400> 49

Gln Ser Val Val Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
 5 10 15

Arg Val Thr Ile Ser Cys Thr Gly Ser Ser Ser Asn Ile Gly Thr Gly
 20 25 30

Tyr Asp Val His Trp Tyr Gln Gln Val Pro Gly Ser Ala Pro Lys Leu
 35 40 45

Leu Ile Tyr Ala Tyr Thr Asn Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60

Ser Gly Ser Lys Ser Gly Met Ser Ala Ser Leu Val Ile Gly Gly Leu
 65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Phe Asp Asp Ser
 85 90 95

Leu Asn Gly Leu Val Phe Gly Pro Gly Thr Ser Val Thr Val Leu
 100 105 110

<210> 50

<211> 333

<212> DNA

<213> Human

<400> 50

cag tct gtg ttg acg cag ccg ccc tca gtg tct ggg gcc cca ggg cag 48
 Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
 5 10 15

agg gtc acc atc tcc tgc act ggg agc cac tcc aac ttc ggg gca ggt 96
 Arg Val Thr Ile Ser Cys Thr Gly Ser His Ser Asn Phe Gly Ala Gly
 20 25 30

act gat gtc cat tgg tac caa cac ctt cca gga aca gcc ccc aga ctc 144
 Thr Asp Val His Trp Tyr Gln His Leu Pro Gly Thr Ala Pro Arg Leu
 35 40 45

ctc att cat gga gac act cat cgg ccc tcc ggg gtc gct gac cga ttc 192
 Leu Ile His Gly Asp Thr His Arg Pro Ser Gly Val Ala Asp Arg Phe
 50 55 60

tct ggc tcc agg tct ggc gcc tca gcc tcc ctg gcc atc act ggg ctc 240
 Ser Gly Ser Arg Ser Gly Ala Ser Ala Ser Leu Ala Ile Thr Gly Leu
 65 70 75 80

cgg gtt gag gat gag gct gat tat tac tgt cag tcg tat gac tat ggc 288
 Arg Val Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Tyr Gly
 85 90 95

ctg aga ggt tgg gtg ttc ggc ggc ggg acc aag ctg acc gtc ctt 333
 Leu Arg Gly Trp Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

<210> 51

<211> 111

<212> PRT

<213> Human

<400> 51

Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
 5 10 15

Arg Val Thr Ile Ser Cys Thr Gly Ser His Ser Asn Phe Gly Ala Gly
 20 25 30

Thr Asp Val His Trp Tyr Gln His Leu Pro Gly Thr Ala Pro Arg Leu
 35 40 45

Leu Ile His Gly Asp Thr His Arg Pro Ser Gly Val Ala Asp Arg Phe
 50 55 60

Ser Gly Ser Arg Ser Gly Ala Ser Ala Ser Leu Ala Ile Thr Gly Leu
 65 70 75 80

Arg Val Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Ser Tyr Asp Tyr Gly
 85 90 95

Leu Arg Gly Trp Val Phe Gly Gly Thr Lys Leu Thr Val Leu
 100 105 110

<210> 52

<211> 321

<212> DNA

<213> Human

<400> 52

gac atc cag atg acc cag tct cca tct tcc gtg tct gca tct ata gga 48
 Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Ile Gly
 5 10 15

gac aga gtc acc atc act tgt cgg gcg agt cag ggt att gac aac tgg 96
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Asp Asn Trp
 20 25 30

tta ggc tgg tat cag cag aaa cct ggg aaa gcc cct aaa ctc ctg atc 144
 Leu Gly Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

tac gat gca tcc aat ttg gac aca ggg gtc cca tca agg ttc agt gga 192
 Tyr Asp Ala Ser Asn Leu Asp Thr Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

agt gga tct ggg aca tat ttt act ctc acc atc agt agc ctg caa gct 240
 Ser Gly Ser Gly Thr Tyr Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala
 65 70 75 80

gaa gat ttt gca gtt tat ttc tgt caa cag gct aaa gct ttt cct ccc 288
 Glu Asp Phe Ala Val Tyr Phe Cys Gln Gln Ala Lys Ala Phe Pro Pro
 85 90 95

act ttc ggc gga ggg acc aag gtg gac atc aaa 321
 Thr Phe Gly Gly Thr Lys Val Asp Ile Lys
 100 105

<210> 53

<211> 107

<212> PRT

<213> Human

<400> 53

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Ile Gly
5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Asp Asn Trp
20 25 30

Leu Gly Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Asp Ala Ser Asn Leu Asp Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Tyr Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala
65 70 75 80

Glu Asp Phe Ala Val Tyr Phe Cys Gln Gln Ala Lys Ala Phe Pro Pro
85 90 95

Thr Phe Gly Gly Thr Lys Val Asp Ile Lys
100 105

<210> 54

<211> 13

<212> PRT

<213> Human

<400> 54

Thr Gly Ser His Ser Asn Phe Gly Ala Gly Thr Asp Val
5 10

<210> 55

<211> 7

<212> PRT

<213> Human

<400> 55

Gly Asp Ser Asn Arg Pro Ser
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<210> 56

<211> 11

<212> PRT

<213> Human

<400> 56

Gln Ser Tyr Asp Tyr Gly Leu Arg Gly Trp Val
5 10

<210> 57

<211> 11

<212> PRT

<213> Human

<400> 57

Arg Ala Ser Gln Asn Ile Asn Asn Tyr Leu Asn
5 10

<210> 58
<211> 7
<212> PRT
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<400> 58

Ala Ala Ser Thr Leu Gln Ser
5

<210> 59
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<400> 59

Gln Gln Tyr Ser Arg Tyr Pro Pro Thr
5

<210> 60
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<400> 60

Thr Gly Ser Ser Thr Asp Val Gly Asn Tyr Asn Tyr Ile Ser
5 10

<210> 61
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<400> 61

Asp Val Thr Ser Arg Pro Ser
5

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Asn Ser Tyr Ser Ala Thr Asp Thr Leu Val
5 10

<210> 63
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<212> PRT
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<400> 63

Thr Gly Gln Ser Ser Asn Ile Gly Ala Asp Tyr Asp Val His
5 10

<210> 64
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<400> 64

Gly His Asn Asn Arg Pro Ser
5

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<400> 65

Gln Ser Tyr Asp Ser Ser Leu Ser Gly Leu Val
5 10

<210> 66
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<400> 66

Arg Ala Ser Gln Asp Ile Ser Ser Trp Leu Ala
5 10

<210> 67
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<400> 67

Ala Ala Ser Leu Leu Gln Ser
5

<210> 68
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<212> PRT
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<400> 68

Gln Gln Ala Asp Ser Phe Pro Pro Thr
5

<210> 69
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<400> 69

Arg Ala Ser Gln Ser Ile Lys Arg Trp Leu Ala
5 10

<210> 70
<211> 7
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<400> 70

Ala Ala Ser Thr Leu Gln Ser
5

<210> 71
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<212> PRT
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<400> 71

Gln Gln Ala Asn Ser Phe Pro Pro Thr
5

<210> 72
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<212> PRT
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<400> 72

Ser Gly Ser Arg Ser Asn Ile Gly Ala His Tyr Glu Val Gln
5 10

<210> 73
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<400> 73

Gly Asp Thr Asn Arg Pro Ser
5

<210> 74
<211> 11
<212> PRT
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<400> 74

Gln Ser Tyr Asp Thr Ser Leu Arg Gly Pro Val
5 10

<210> 75
<211> 14
<212> PRT
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<400> 75

Thr Gly Ser Ser Ser Asn Ile Gly Thr Gly Tyr Asp Val His
5 10

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<212> PRT
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<400> 76

Ala Tyr Thr Asn Arg Pro Ser
5

<210> 77
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<400> 77

Gln Ser Phe Asp Asp Ser Leu Asn Gly Leu Val
5 10

<210> 78
<211> 14
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Thr Gly Ser His Ser Asn Phe Gly Ala Gly Thr Asp Val His
5 10

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<212> PRT
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<400> 79

Gly Asp Thr His Arg Pro Ser
5

<210> 80
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<212> PRT
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<400> 80

Gln Ser Tyr Asp Tyr Gly Leu Arg Gly Trp Val
5 10

<210> 81
<211> 11
<212> PRT
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<400> 81

Arg Ala Ser Gln Gly Ile Asp Asn Trp Leu Gly
5 10

<210> 82
 <211> 7
 <212> PRT
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<400> 82

Asp Ala Ser Asn Leu Asp Thr
 5

<210> 83
 <211> 9
 <212> PRT
 <213> Human

<400> 83

Gln Gln Ala Lys Ala Phe Pro Pro Thr
 5

<210> 84
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 <212> DNA
 <213> Human

<400> 84

ggtaccgag aaagaaccgg ctcccgagtt ctgggcattt cgcccggttc gaggtgcagg 59

atg cag agc aag gtg ctg ctg gcc gtc ctg tgg ctc tgc gtg gag 107
 Met Gln Ser Lys Val Leu Leu Ala Val Ala Leu Trp Leu Cys Val Glu
 5 10 15

acc cgg gcc tct gtg ggt ttg cct agt gtt tct ctt gat ctg ccc 155
 Thr Arg Ala Ala Ser Val Gly Leu Pro Ser Val Ser Leu Asp Leu Pro
 20 25 30

agg ctc agc ata caa aaa gac ata ctt aca att aag gct aat aca act 203
 Arg Leu Ser Ile Gln Lys Asp Ile Leu Thr Ile Lys Ala Asn Thr Thr
 35 40 45

ctt caa att ac tgc agg gga cag agg gac ttg gac tgg ctt tgg ccc 251
 Leu Gln Ile Thr Cys Arg Gly Gln Arg Asp Leu Asp Trp Leu Trp Pro
 50 55 60

aat aat cag agt ggc agt gag caa agg gtg gag gtg act gag tgc agc 299
 Asn Asn Gln Ser Gly Ser Glu Gln Arg Val Glu Val Thr Glu Cys Ser
 65 70 75 80

gat ggc ctc ttc tgt aag aca ctc aca att cca aaa gtg atc gga aat 347
 Asp Gly Leu Phe Cys Lys Thr Leu Thr Ile Pro Lys Val Ile Gly Asn
 85 90 95

gac act gga gcc tac aag tgc ttc tac cgg gaa act gac ttg gcc tcg 395
 Asp Thr Gly Ala Tyr Lys Cys Phe Tyr Arg Glu Thr Asp Leu Ala Ser
 100 105 110

gtc att tat gtc tat gtt caa gat tac aga tct cca ttt att gct tct 443
 Val Ile Tyr Val Tyr Val Gln Asp Tyr Arg Ser Pro Phe Ile Ala Ser
 115 120 125

gtt agt gac caa cat gga gtc gtg tac att act gag aac aaa aac aaa 491
 Val Ser Asp Gln His Gly Val Val Tyr Ile Thr Glu Asn Lys Asn Lys

130	135	140	
act gtg gtg att cca tgt ctc ggg tcc att tca aat ctc aac gtg tca			539
Thr Val Val Ile Pro Cys Leu Gly Ser Ile Ser Asn Leu Asn Val Ser			
145	150	155	160
ctt tgt gca aga tac cca gaa aag aga ttt gtt cct gat ggt aac aga			587
Leu Cys Ala Arg Tyr Pro Glu Lys Arg Phe Val Pro Asp Gly Asn Arg			
165	170	175	
att tcc tgg gac agc aag aag ggc ttt act att ccc agc tac atg atc			635
Ile Ser Trp Asp Ser Lys Lys Gly Phe Thr Ile Pro Ser Tyr Met Ile			
180	185	190	
agc tat gct ggc atg gtc ttc tgt gaa gca aaa att aat gat gaa agt			683
Ser Tyr Ala Gly Met Val Phe Cys Glu Ala Lys Ile Asn Asp Glu Ser			
195	200	205	
tac cag tct att atg tac ata gtt gtc gtt gta ggg tat agg att tat			731
Tyr Gln Ser Ile Met Tyr Ile Val Val Val Val Gly Tyr Arg Ile Tyr			
210	215	220	
gat gtg gtt ctg agt ccg tct cat gga att gaa cta tct gtt gga gaa			779
Asp Val Val Leu Ser Pro Ser His Gly Ile Glu Leu Ser Val Gly Glu			
225	230	235	240
aag ctt gtc tta aat tgt aca gca aga act gaa cta aat gtg ggg att			827
Lys Leu Val Leu Asn Cys Thr Ala Arg Thr Glu Leu Asn Val Gly Ile			
245	250	255	
gac ttc aac tgg gaa tac cct tct tcg aag cat cag cat aag aaa ctt			875
Asp Phe Asn Trp Glu Tyr Pro Ser Ser Lys His Gln His Lys Lys Leu			
260	265	270	
gta aac cga gac cta aaa acc cag tct ggg agt gag atg aag aaa ttt			923
Val Asn Arg Asp Leu Lys Thr Gln Ser Gly Ser Glu Met Lys Lys Phe			
275	280	285	
ttg agc acc tta act ata gat ggt gta acc cgg agt gac caa gga ttg			971
Leu Ser Thr Leu Thr Ile Asp Gly Val Thr Arg Ser Asp Gln Gly Leu			
290	295	300	
tac acc tgt gca gca tcc agt ggg ctg atg acc aag aag aac agc aca			1019
Tyr Thr Cys Ala Ala Ser Ser Gly Leu Met Thr Lys Lys Asn Ser Thr			
305	310	315	320
ttt gtc agg gtc cat gaa aaa cct ttt gtt gct ttt gga agt ggc atg			1067
Phe Val Arg Val His Glu Lys Pro Phe Val Ala Phe Gly Ser Gly Met			
325	330	335	
gaa tct ctg gtg gaa gcc acg gtg ggg gag cgt gtc aga atc cct gcg			1115
Glu Ser Leu Val Glu Ala Thr Val Gly Glu Arg Val Arg Ile Pro Ala			
340	345	350	
aag tac ctt ggt tac cca ccc cca gaa ata aaa tgg tat aaa aat gga			1163
Lys Tyr Leu Gly Tyr Pro Pro Glu Ile Lys Trp Tyr Lys Asn Gly			
355	360	365	
ata ccc ctt gag tcc aat cac aca att aaa gcg ggg cat gta ctg acg			1211
Ile Pro Leu Glu Ser Asn His Thr Ile Lys Ala Gly His Val Leu Thr			
370	375	380	
att atg gaa gtg agt gaa aga gac aca gga aat tac act gtc atc ctt			1259
Ile Met Glu Val Ser Glu Arg Asp Thr Gly Asn Tyr Thr Val Ile Leu			
385	390	395	400

acc aat ccc att tca aag gag aag cag agc cat gtg gtc tct ctg gtt 1307
 Thr Asn Pro Ile Ser Lys Glu Lys Gln Ser His Val Val Ser Leu Val
 405 410 415

 gtg tat gtc cca ccc cag att ggt gag aaa tct cta atc tct cct gtg 1355
 Val Tyr Val Pro Pro Gln Ile Gly Glu Lys Ser Leu Ile Ser Pro Val
 420 425 430

 gat tcc tac cag tac ggc acc act caa acg ctg aca tgt acg gtc tat 1403
 Asp Ser Tyr Gln Tyr Gly Thr Thr Gln Thr Leu Thr Cys Thr Val Tyr
 435 440 445

 gcc att cct ccc ccg cat cac atc cac tgg tat tgg cag ttg gag gaa 1451
 Ala Ile Pro Pro His His Ile His Trp Tyr Trp Gln Leu Glu Glu
 450 455 460

 gag tgc gcc aac gag ccc agc cat gct gtc tca gtg aca aac cca tac 1499
 Glu Cys Ala Asn Glu Pro Ser His Ala Val Ser Val Thr Asn Pro Tyr
 465 470 475 480

 cct tgt gaa gaa tgg aga agt gtg gag gac ttc cag gga gga aat aaa 1547
 Pro Cys Glu Glu Trp Arg Ser Val Glu Asp Phe Gln Gly Gly Asn Lys
 485 490 495

 att gaa gtt aat aaa aat caa ttt gct cta att gaa gga aat aac aaa 1595
 Ile Glu Val Asn Lys Asn Gln Phe Ala Leu Ile Glu Gly Lys Asn Lys
 500 505 510

 act gta agt acc ctt gtt atc caa gcg gca aat gtg tca gct ttg tac 1643
 Thr Val Ser Thr Leu Val Ile Gln Ala Ala Asn Val Ser Ala Leu Tyr
 515 520 525

 aaa tgt gaa gcg gtc aac aaa gtc ggg aga gga gag agg gtg atc tcc 1691
 Lys Cys Glu Ala Val Asn Lys Val Gly Arg Gly Glu Arg Val Ile Ser
 530 535 540

 ttc cac gtg acc agg ggt cct gaa att act ttg caa cct gac atg cag 1739
 Phe His Val Thr Arg Gly Pro Glu Ile Thr Leu Gln Pro Asp Met Gln
 545 550 555 560

 ccc act gag cag gag agc gtg tct ttg tgg tgc act gca gac aga tct 1787
 Pro Thr Glu Gln Ser Val Ser Leu Trp Cys Thr Ala Asp Arg Ser
 565 570 575

 acg ttt gag aac ctc aca tgg tac aag ctt ggc cca cag cct ctg cca 1835
 Thr Phe Glu Asn Leu Thr Trp Tyr Lys Leu Gly Pro Gln Pro Leu Pro
 580 585 590

 atc cat gtg gga gag ttg ccc aca cct gtt tgc aag aac ttg gat act 1883
 Ile His Val Gly Glu Leu Pro Thr Pro Val Cys Lys Asn Leu Asp Thr
 595 600 605

 ctt tgg aaa ttg aat gcc acc atg ttc tct aat agc aca aat gac att 1931
 Leu Trp Lys Leu Asn Ala Thr Met Phe Ser Asn Ser Thr Asn Asp Ile
 610 615 620

 ttg atc atg gag ctt aag aat gca tcc ttg cag gac caa gga gac tat 1979
 Leu Ile Met Glu Leu Lys Asn Ala Ser Leu Gln Asp Gln Gly Asp Tyr
 625 630 635 640

 gtc tgc ctt gct caa gac agg aag acc aag aaa aga cat tgc gtg gtc 2027
 Val Cys Leu Ala Gln Asp Arg Lys Thr Lys Lys Arg His Cys Val Val
 645 650 655

 agg cag ctc aca gtc cta gag cgt gtg gca ccc acg atc aca gga aac 2075

Arg Gln Leu Thr Val Leu Glu Arg Val Ala Pro Thr Ile Thr Gly Asn	660	665	670	
ctg gaa aat cag acg aca agt att ggg gaa agc atc gaa gtc tca tgc				2123
Leu Glu Asn Gln Thr Thr Ser Ile Gly Glu Ser Ile Glu Val Ser Cys	675	680	685	
acg gca tct ggg aat ccc cct cca cag atc atg tgg tat aaa gat aat				2171
Thr Ala Ser Gly Asn Pro Pro Gln Ile Met Trp Phe Lys Asp Asn	690	695	700	
gag acc ctt gta gaa gac tca ggc att gta ttg aag gat ggg aac cgg				2219
Glu Thr Leu Val Glu Asp Ser Gly Ile Val Leu Lys Asp Gly Asn Arg	705	710	715	720
aac ctc act atc cgc aga gtg agg aag gag gac gaa ggc ctc tac acc				2267
Asn Leu Thr Ile Arg Arg Val Arg Lys Glu Asp Glu Gly Leu Tyr Thr	725	730	735	
tgc cag gca tgc agt gtt ctt ggc tgt gca aaa gtg gag gca ttt ttc				2315
Cys Gln Ala Cys Ser Val Leu Gly Cys Ala Lys Val Glu Ala Phe Phe	740	745	750	
ata ata gaa ggt gcc cag gaa aag acg aac ttg gaa				2351
Ile Ile Glu Gly Ala Gln Glu Lys Thr Asn Leu Glu	755	760		
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Met Gln Ser Lys Val Leu Leu Ala Val Ala Leu Trp Leu Cys Val Glu	5	10	15	
Thr Arg Ala Ala Ser Val Gly Leu Pro Ser Val Ser Leu Asp Leu Pro	20	25	30	
Arg Leu Ser Ile Gln Lys Asp Ile Leu Thr Ile Lys Ala Asn Thr Thr	35	40	45	
Leu Gln Ile Thr Cys Arg Gly Gln Arg Asp Leu Asp Trp Leu Trp Pro	50	55	60	
Asn Asn Gln Ser Gly Ser Glu Gln Arg Val Glu Val Thr Glu Cys Ser	65	70	75	80
Asp Gly Leu Phe Cys Lys Thr Leu Thr Ile Pro Lys Val Ile Gly Asn	85	90	95	
Asp Thr Gly Ala Tyr Lys Cys Phe Tyr Arg Glu Thr Asp Leu Ala Ser	100	105	110	
Val Ile Tyr Val Tyr Val Gln Asp Tyr Arg Ser Pro Phe Ile Ala Ser	115	120	125	
Val Ser Asp Gln His Gly Val Val Tyr Ile Thr Glu Asn Lys Asn Lys	130	135	140	
Thr Val Val Ile Pro Cys Leu Gly Ser Ile Ser Asn Leu Asn Val Ser	145	150	155	160

Leu Cys Ala Arg Tyr Pro Glu Lys Arg Phe Val Pro Asp Gly Asn Arg
 165 170 175
 Ile Ser Trp Asp Ser Lys Lys Gly Phe Thr Ile Pro Ser Tyr Met Ile
 180 185 190
 Ser Tyr Ala Gly Met Val Phe Cys Glu Ala Lys Ile Asn Asp Glu Ser
 195 200 205
 Tyr Gln Ser Ile Met Tyr Ile Val Val Val Val Gly Tyr Arg Ile Tyr
 210 215 220
 Asp Val Val Leu Ser Pro Ser His Gly Ile Glu Leu Ser Val Gly Glu
 225 230 235 240
 Lys Leu Val Leu Asn Cys Thr Ala Arg Thr Glu Leu Asn Val Gly Ile
 245 250 255
 Asp Phe Asn Trp Glu Tyr Pro Ser Ser Lys His Gln His Lys Lys Leu
 260 265 270
 Val Asn Arg Asp Leu Lys Thr Gln Ser Gly Ser Glu Met Lys Lys Phe
 275 280 285
 Leu Ser Thr Leu Thr Ile Asp Gly Val Thr Arg Ser Asp Gln Gly Leu
 290 295 300
 Tyr Thr Cys Ala Ala Ser Ser Gly Leu Met Thr Lys Lys Asn Ser Thr
 305 310 315 320
 Phe Val Arg Val His Glu Lys Pro Phe Val Ala Phe Gly Ser Gly Met
 325 330 335
 Glu Ser Leu Val Glu Ala Thr Val Gly Glu Arg Val Arg Ile Pro Ala
 340 345 350
 Lys Tyr Leu Gly Tyr Pro Pro Glu Ile Lys Trp Tyr Lys Asn Gly
 355 360 365
 Ile Pro Leu Glu Ser Asn His Thr Ile Lys Ala Gly His Val Leu Thr
 370 375 380
 Ile Met Glu Val Ser Glu Arg Asp Thr Gly Asn Tyr Thr Val Ile Leu
 385 390 395 400
 Thr Asn Pro Ile Ser Lys Glu Lys Gln Ser His Val Val Ser Leu Val
 405 410 415
 Val Tyr Val Pro Pro Gln Ile Gly Glu Lys Ser Leu Ile Ser Pro Val
 420 425 430
 Asp Ser Tyr Gln Tyr Gly Thr Thr Gln Thr Leu Thr Cys Thr Val Tyr
 435 440 445
 Ala Ile Pro Pro Pro His His Ile His Trp Tyr Trp Gln Leu Glu Glu
 450 455 460
 Glu Cys Ala Asn Glu Pro Ser His Ala Val Ser Val Thr Asn Pro Tyr
 465 470 475 480
 Pro Cys Glu Glu Trp Arg Ser Val Glu Asp Phe Gln Gly Gly Asn Lys
 485 490 495
 Ile Glu Val Asn Lys Asn Gln Phe Ala Leu Ile Glu Gly Lys Asn Lys
 500 505 510

Thr Val Ser Thr Leu Val Ile Gln Ala Ala Asn Val Ser Ala Leu Tyr
 515 520 525
 Lys Cys Glu Ala Val Asn Lys Val Gly Arg Gly Glu Arg Val Ile Ser
 530 535 540
 Phe His Val Thr Arg Gly Pro Glu Ile Thr Leu Gln Pro Asp Met Gln
 545 550 555 560
 Pro Thr Glu Gln Glu Ser Val Ser Leu Trp Cys Thr Ala Asp Arg Ser
 565 570 575
 Thr Phe Glu Asn Leu Thr Trp Tyr Lys Leu Gly Pro Gln Pro Leu Pro
 580 585 590
 Ile His Val Gly Glu Leu Pro Thr Pro Val Cys Lys Asn Leu Asp Thr
 595 600 605
 Leu Trp Lys Leu Asn Ala Thr Met Phe Ser Asn Ser Thr Asn Asp Ile
 610 615 620
 Leu Ile Met Glu Leu Lys Asn Ala Ser Leu Gln Asp Gln Gly Asp Tyr
 625 630 635 640
 Val Cys Leu Ala Gln Asp Arg Lys Thr Lys Lys Arg His Cys Val Val
 645 650 655
 Arg Gln Leu Thr Val Leu Glu Arg Val Ala Pro Thr Ile Thr Gly Asn
 660 665 670
 Leu Glu Asn Gln Thr Thr Ser Ile Gly Glu Ser Ile Glu Val Ser Cys
 675 680 685
 Thr Ala Ser Gly Asn Pro Pro Gln Ile Met Trp Phe Lys Asp Asn
 690 695 700
 Glu Thr Leu Val Glu Asp Ser Gly Ile Val Leu Lys Asp Gly Asn Arg
 705 710 715 720
 Asn Leu Thr Ile Arg Arg Val Arg Lys Glu Asp Glu Gly Leu Tyr Thr
 725 730 735
 Cys Gln Ala Cys Ser Val Leu Gly Cys Ala Lys Val Glu Ala Phe Phe
 740 745 750
 Ile Ile Glu Gly Ala Gln Glu Lys Thr Asn Leu Glu
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20

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19

<210> 89

<211> 21

<212> DNA

<213> Artificial Sequence

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21

<210> 90

<211> 20

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<213> Artificial Sequence

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gtgaccaaca tggagtcgtg

20

<210> 91

<211> 20

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<213> Artificial Sequence

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<223> amplification primer for KDR

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ccagagattc catgccactt

20

<210> 92

<211> 19

<212> DNA

<213> Artificial Sequence

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<223> amplification primer for KDR

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tcatgttga gaccttcaa

19

<210> 93

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<400> 93

gtctttgcgg atgtccacg

19